

The smelter has been regulated under the Resource Conservation and Recovery Act (RCRA) since August 1980. EPA administered the RCRA hazardous waste program until the state received authorization in 1984 for the base program and authorization for corrective action in 2000. Following authorization, MDEQ became the lead agency responsible for ensuring appropriate management and handling of hazardous waste generator requirements at the Asarco facility.

In January 1998, ASARCO and EPA reached settlement of alleged violations of RCRA and the Clean Water Act in a federal Consent Decree (CD). This CD included a penalty component, as well as specified a Supplemental Environmental Project and an Environmental Management System for the smelter operation. As part of this CD, RCRA assumed the lead for the characterization and cleanup of the facility soils and ground water and ground water plumes emanating from the facility pursuant to the corrective action process.

The federal CD also allowed Asarco to construct a Corrective Action Management Unit (CAMU). In 1999, EPA granted ASARCO formal approval to construct the CAMU, consisting of up to 3 landfill cells. ASARCO completed construction of the first CAMU Phase 1 cell in 2001 for the storage of stockpiled soils and remediation wastes and has been successfully monitoring and maintaining the CAMU per the requirements of the CAMU Design Report.

In 2005, the DEQ and Asarco entered into a state Consent Decree for violation of state hazardous waste regulations. The 2005 Consent Decree required Asarco to properly manage all remaining hazardous waste on-site from certain process units. Asarco has completed a portion of their obligations. On October 2, 2007, Asarco and the DEQ entered into an Administrative Order on Consent (AOC). This AOC extends until 2012 and covers the continued management of hazardous waste on-site. To address the removal of hazardous waste, Asarco has chosen to demolish structures to facilitate disposal of hazardous waste.

The structures that have been demolished in previous years include: the Zinc Plant, the Sinter Plant, the Blast Furnace, the Dross Plant, the Acid Plant Control Room, the Thawhouse, and the Main Office Building.

The Asarco plant shut down operations in 2001. Asarco completed the Current Conditions/Release Assessment Report in 1999. The Phase 1 RCRA Facility Investigation (RFI) was formally completed and approved by EPA in 2006. An RFI Phase 2, consisting of additional site characterization for a broader list of parameters and risk assessment for both ecological and human health receptors will be conducted, commencing in 2008.

A second CAMU cell was approved in 2007 and is currently being constructed to the southeast of the plant. Demolition waste including hazardous waste will be disposed in the second CAMU cell beginning in June 2008 and continuing through the fall. A temporary cap will be placed over the cell and removed for acceptance of additional demolition or corrective action wastes materials in 2009.

## **Monitoring**

Groundwater and surface water monitoring has been performed since 1991 on the plant site and off-site in the community to assess contaminant concentrations and determine the extent and the flow characteristics of the groundwater plume. Currently the monitoring schedule is as follows:

<b>Monthly:</b>	4 wells on Gail Street
<b>Quarterly:</b>	55 wells (including 9 off-site and 4 on-site new wells being installed by the end of May)
<b>Semi-annually:</b>	120 wells and 6 surface water sites
<b>Annually:</b>	An additional 22 residential and public water supply wells are added to the semi-annual list of monitoring sites

## **Source Control Measures**

The former acid plant sediment drying area and the former Speiss/Dross Plan area were identified as major source areas to the ground water. Interim measures, which consisted of encapsulation with a slurry wall to contain the chemicals, were installed for the acid plant sediment drying area in Fall 2006 and the Speiss/Dross Area in Fall 2007. Asarco has estimated that these two source areas contributed approximately 99% of the mass loading to the arsenic ground water plume.

## **GW Technologies: Permeable Reactive Barrier/Impacts of Selenium Detection**

In the Summer of 2005, EPA Office of Research and Development (ORD) constructed a 30-foot pilot permeable reactive barrier (PRB) wall to evaluate the potential effectiveness of *in situ* treatment of the arsenic plume down-gradient of these source areas. Results have shown that the PRB effectively removes the arsenic where capture is attained. In Fall 2006, monitoring results revealed the presence of a selenium plume both onsite and offsite at levels in exceedances of the Federal MCLs. The Phase 2 RFI effort will focus on identification of selenium source areas, delineation of the extent of the selenium plume and scoping of viable technologies to remove the selenium as well as treat other ground water contaminants of concern.

## **ASARCO EAST HELENA SMELTER SITE EPA RCRA OVERVIEW**

- Regulated under RCRA since August 1980
- EPA administered RCRA program until 1984 state authorization
- 1998 Asarco & EPA entered into federal Consent Decree for CWA & RCRA alleged violations
- CD Components: penalty, SEP, RCRA assumed lead for characterization of smelter soils and groundwater and groundwater contamination offsite
- CERCLA retains lead for offsite soils
- CD also allowed facility to construct up to 3 CAMU cells

## WORK COMPLETED UNDER RCRA CD

- Current Conditions/Release Assessment Report, approved Feb. 1999
- CAMU CONSTRUCTION:
  - CAMU Cell 1, completed 2001
  - CAMU Cell 2, constructed 2008
- Interim Measures Work Plan, approved May 2000
- Interim Measures Work Plan Addendum for GW, November 2005
- Phase 1 RCRA Facility Investigation approved 2006
- Source Control Measures: Implemented 2006 & 2007
- RFI Phase 2, including risk assessment, commencing in 2009
- Ongoing long-term monitoring

# GROUNDWATER & SURFACE WATER MONITORING

- Groundwater & surface water monitoring performed since 1991
- Current monitoring schedule:
  - Monthly: 3 wells on Gail Street
  - Quarterly: 55 wells
  - Semi-annually: 120 wells and 6 surface water sites
  - Annually: additional 22 residential and public water supply wells added to semi-annual list of monitoring sites
  - Ongoing: open invitation by Asarco to monitor anyone's private well in East Helena upon request

## SOURCE CONTROL MEASURES

- Addresses 2 major arsenic source areas
  - Asarco estimates these areas contributed 99% of mass loading of arsenic to groundwater plume
- Former Acid Plant Sediment Drying Area, Fall 2006
  - Encapsulation by slurry wall
  - Installation of temporary cap to be followed by permanent cap
- Speiss/Dross Plant Area, Fall 2007
  - Encapsulation by slurry wall
  - Installation of temporary cap

# GROUNDWATER TECHNOLOGIES

- Pilot-Scale Permeable Reactive Barrier (PRB)
  - Summer 2005, EPA ORD installed pilot-scale PRB to evaluate in situ treatment of arsenic plume with zero-valent iron
  - PRB effectively removes As in areas where capture is attained
- Selenium detected offsite in fall 2006
  - Additional monitoring efforts to delineate extent and identify sources
  - Pilot-scale PRB located for arsenic plume, not in areas of high selenium
  - Further work necessary to scope viable technologies for Se removal

# FACTORS IMPACTING BOUNDARY CONTROL

- Modeling results
- Water usage (water rights, public water supplies, allowance for future growth, etc.)
- Physical constraints (railroad line, slag pile, northwest bend of Prickly Pear Creek)
- Permitting
- Reliability
- Siting issues for treatment system including land-reuse scenarios
- Costs: capital and long-term O&M



## RFI PHASE 2 WORK

- Broader parameter list
- Water usage study
- Risk Assessment for Ecological & Human Health
- Additional characterization:
  - Prickly Pear Creek
  - Wilson Ditch
  - Slag pile
  - Acid plant wastewater pond
  - Rail car staging area
  - Tito Park
  - Upper and Lower Lake sediments
  - Old Zinc Plant
- Groundwater Studies
  - Installation of additional wells
  - Modeling and design of boundary control alternatives
  - Additional studies of treatment media